

Access to Diabetes Treatment in Northern Ethiopia

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Treatments for diabetes in Ethiopia are at present only available in hospitals so many patients must travel great distances to obtain insulin, tablets, and diabetes education. We reviewed all 496 people with diabetes attending the diabetic clinic at Gondar Hospital (281 with Type 1 (insulin-dependent) diabetes mellitus (DM) and 215 with Type 2 (non-insulin-dependent) DM. Half of the patients came from rural areas, all but 3 of them travelling more than 20 km, one-quarter of them more than 100 km and 33 patients (13 %) more than 180 km. It is likely that many patients who fail to attend from the more distant areas have died. We are developing a scheme which would enable diabetic patients to be treated at rural health centres by nurses trained in the principles of diabetes care which could greatly improve the outlook for diabetic patients in Ethiopia. © 1998 John Wiley & Sons, Ltd.

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Introduction

There is growing recognition of the importance of chronic, non-communicable diseases in determining the health of people in developing countries, notably diseases such as asthma and diabetes. An increasing number of patients with diabetes in African countries are being identified,¹ and awareness of the prevalence of complications is rising.^{1–14} Most studies demonstrate the inadequacy of diabetic control and the relatively high mortality² when compared to the prognosis of diabetes in western societies. Recent reviews from Addis Ababa, from the work of Dr Frances Lester^{2–4,7} describe the high incidence of tuberculosis in diabetic patients.

The aim of this study was to identify all the people with diabetes attending the clinic at the hospital of the Gondar College of Medical Sciences in Ethiopia, to define the proportion of rural people at this urban clinic and to estimate the distance travelled to the hospital, in order to discover whether the journey itself might deter people from attending for treatment.

Patients and Methods

All 496 adult diabetic patients over 16 years of age attending the diabetic clinic at the hospital in Gondar were included in this study. Eleven children also attended but have not been included. Details of the patients are

shown in Table 1. Type 1 or insulin-dependent diabetes was defined as presentation with acute symptoms and a weight loss of more than 10 % of body weight in people under 30 years of age who started insulin immediately.

The records for demographic details together with history and examination documented in a set format were established and completed by the physician with sole responsibility for diabetes in the clinic (SA) and kept under locked storage in her office. The documentation represents a complete description of all the diabetic patients attending the hospital clinic between January 1989 and December 1993; no records have been lost.

The hospital in Gondar serves an urban population of 120 000 and a rural population of approximately three million. Those in the country live in scattered traditional thatched huts with mud walls (tukhals) and no electricity. The nearest hospitals to the north and west of Gondar, where most of the patients live, are 334 km to the north-east at Aksum, 265 km to the north-west on the Sudan border at Himora, and at Metemma 168 km to the west (Figure 1), all reached by unsurfaced roads.

Results

Two hundred and fifty-five of the 496 patients came from rural areas outside the town. They travelled considerable distances to reach the hospital (Figure 2). All but three had a journey of greater than 20 km, 59 (23 %) travelled over 100 km, and 33 (13 %) more than 180 km.

There were more Type 1 DM patients (281 or 57 %) than Type 2 (215 or 43 %) (Table 1), with proportionately more rural patients with Type 1 DM (75 %) than in the town (40 %) (Table 2). Thus, the calculated prevalence

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Table 1. Patient details

Patients	Number	Male:female	Family history	Age (mean \pm SD)	Diabetes duration (mean years \pm SD)	Body mass index (mean \pm SD)	Fasting blood glucose mmol l ⁻¹ (mean \pm SD)	Urine: albutix positive (+ - + + +)	Diastolic blood pressure >95 mmHg
Type 1 DM	281	2.1 : 1	22.4 %	30.4 \pm 11.6	6.2 \pm 5.0	17.6 \pm 2.8	15.7 \pm 6.5	8 (2.8 %)	4 (1.4 %)
Type 2 DM	215	1.6 : 1	2.8 %	54.7 \pm 10.7	6.4 \pm 5.4	23.3 \pm 4.7	11.6 \pm 5.3	10 (4.7 %)	35 (16.0 %)



Figure 1. Map of Ethiopia showing the location of the Gondar College of Medical Sciences and the nearest hospitals at Aksum (334 km), Himora (265 km) and Metemma (168 km)

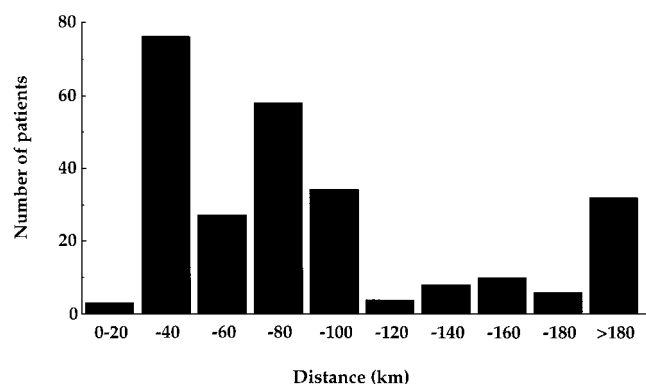


Figure 2. Distance travelled to the hospital diabetic clinic by 255 rural patients

Table 2. Rural and urban patients

	Population	Number of diabetic patients	Prevalence DM (%)	% Type 1 DM
Town	120 000	241	0.2	40
Country	3 000 000	255	0.009	75

of diabetes in the town population was 0.2 % and that in rural areas only 0.009 % (Table 2). Half of the Type 1 DM patients were in the age range 16–30 years, and scarcely any were over 50 years old (5.6 %). All the Type 2 patients were over 30 years old. Only 14 % and 17 % of Type 1 and Type 2 patients, respectively, had a diabetes duration longer than 10 years. The patients were generally thin, especially Type 1 DM patients, whose mean BMI was 17.6 ± 2.8 (range 12–24). Diabetes was often poorly controlled (fasting blood glucose in the range 20–30 mmol l⁻¹ in 26 % and 9 % of Type 1 and Type 2 patients, respectively).

Discussion

Eighty-five per cent of the people of Ethiopia (population approximately 60 million) live in isolated rural areas,¹⁴ in scattered traditional thatched huts with mud walls (tukhals) without electricity. Most of them are far (many kilometres) from the few, mainly unsurfaced, roads. Transport to and from the dwellings is therefore possible only by foot or mule (Figure 3), and possibly by bus or taxi once the road has been reached. The people are dependent on subsistence agriculture and disposable cash is rarely available except after the annual harvest, so that most of the people would be unable to pay for public transport. Town dwellers, fewer in number, live mainly in tin-roofed huts, some of which have electricity.

Gondar is a town of approximately 120 000 people situated in mountainous country in northern Ethiopia not far from Lake Tana, the source of the Blue Nile. Gondar



Figure 3. Mode of transport on unsurfaced roads in the mountainous countryside to the north of Gondar

College of Medical Sciences is one of only three medical schools in Ethiopia (the others are at Jimma in the south, and in the capital Addis Ababa). The hospital serves the people in the town itself and its rural district of approximately three million people. The nearest towns with hospitals are up to 334 km distant. Drugs including insulin are normally available only in the hospitals. Some medicines (but not insulin) can be purchased at rural pharmacies for those who can afford to pay. Insulin is not therefore available in the country areas.

Access to diabetes treatment for rural Ethiopians is therefore limited by the huge distances which many of them have to travel. The hospital at Gondar is the only local source of diabetes treatment. The majority of those from outside the town, representing about half of the clinic population, must travel distances from 20 km up to 200 km or occasionally more and almost one-quarter of them travel over 100 km. These distances may take as much as 5 days' journeying in each direction and may cost a disproportionate amount of the patient's savings. Some people move from country to town for this reason, meanwhile losing employment and becoming beggars. Others, not surprisingly, give up the unequal struggle of attending hospital every month or two to receive vital though scarce supplies of insulin, either due to exhaustion or inability to pay the bus or vehicle costs. It is assumed that protracted non-attendance of Type 1 DM patients which repeatedly occurs suggests that they may have died, and this possibility is now under review.

There is a considerable bias in the diabetic population attending the hospital clinic. The excess of Type 1 DM over Type 2 is in stark contrast to the clinic in Addis Ababa, where there are three to five times as many Type 2 as Type 1 patients.^{2,14} This predominance of Type 1 DM patients attending for treatment is further accentuated in the rural population. However, just 0.2 % of the town population are known to have diabetes compared to only 0.009 % of the rural population. A total prevalence for diabetes in this region of 0.34 % established was by Peters in 1983.¹⁵ While Type 1 diabetes might be more common in the extremely thin rural people, these observations also suggest that many rural patients, especially those with Type 2 disease, remain either untreated or undiagnosed.

As in other African diabetic populations, the patients are relatively young, and overall poorly controlled. Many of the Type 1 patients are also very thin—the average BMI of 17.6 is even less than reported in diabetic patients from Addis Ababa² and lower than the mean for a similar non-diabetic population in the Gondar area studied in 1986.^{16,17} There are few long-term survivors and few patients attending the hospital had had diabetes for more than 10 years—14 % and 17 % of Type 1 and Type 2 patients respectively, compared to 29 % in Addis Ababa. There were scarcely any Type 1 patients over 50 years of age.

An inevitable conclusion resulting from these obser-

vations is that treatment must be delivered directly to local populations, so that medicines and expertise from the local hospital are made available at country health centres which serve the rural people. A joint project supported by the Tropical Health and Education Trust in London with the Gondar College of Medical Sciences aims to train nurses in the management of diabetes and to deliver care in the community along similar lines to hospital/community shared care schemes widely established in the UK.

Already Gondar has a physician with a special interest in diabetes (SA) who is assisted by a dedicated, trained nurse paid for by the Trust. Diabetes records are meticulously documented and kept under lock and key. Clinics have been established in 4 of 10 rural health centres, taking treatment considerably nearer the people. Transport is enhanced by the delivery of a land rover purchased with lottery funds awarded to the Trust for improving services for chronic diseases including diabetes.

This scheme is in harmony with the policy of the Ministry of Health to decentralize care, but its success will depend on the infra structure for care at health centres, supported by the Ministry, including a sustained supply of insulin and oral hypoglycaemic agents. If these measures are implemented, we believe that the outlook for people with diabetes in Ethiopia could be greatly improved.

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